## **CLAIMS**

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## WHAT IS CLAIMED IS:

- 1. A medical article comprising an implantable substrate having a coating, the coating including a polymeric product of a reaction between a first reagent, a second reagent, and a third reagent, wherein:
- (a) the first reagent is selected from a group consisting of compounds having formulae (1), (2), (3), and (4):

O O 
$$\| \| \| \| \|$$
 HO- $R_2$ -C-NH-Y-NH-C- $R_2$ -OH

HO-X-OH (3)

$$H_2N-Y-NH_2 \tag{4}$$

(b) the second reagent is selected from a group consisting of compounds having formulae (5), (6), (7), and (8):

25 
$$\parallel$$
  $\parallel$   $\parallel$   $\parallel$  (6)  $\parallel$  HO- $R_2$ -C-NH- $R_4$ -NH-C- $R_2$ -OH

$$HO-R_4-OH$$
 (7)

30 
$$H_2N-R_4-NH_2$$
 (8)

(c) the third reagent is a dicarboxylic acid having the formula (9):

$$\begin{array}{cccc}
O & O \\
\parallel & \parallel \\
HO-C-R_3-C-OH
\end{array}$$
(9)

wherein:

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R<sub>1</sub> is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R<sub>2</sub> is methylene, methylene, n-propylene, iso-propylene, ethylmethylene, n-butylene, iso-butylene, sec-butylene, or n-amylene group;

 $R_3$  is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

R<sub>4</sub> is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone), and cellulosics;

X is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12; and

Y is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is 1, 2, or 5.

- 2. The medical article of Claim 1, wherein the implantable substrate is a stent.
- 3. The medical article of Claim 1, wherein the compound of formula (1) is a diol-diamine, the diol-diamine is a product of condensation of an amino acid and a diol.
  - 4. The medical article of Claim 3, wherein the amino acid has the formula (10):

 $H_2N$ — $CHR_1$ —COOH. (10)

- 5. The medical article of Claim 3, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, and phenyl alanine.
- 6. The medical article of Claim 3, wherein a diol is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.
  - 7. The medical article of Claim 1, wherein the compound of formula (2) is an amidediol, the amidediol is a product of condensation of a hydroxy acid and a diamine.
- 8. The medical article of Claim 7, wherein the hydroxy acid has the formula (11):

  HO—R<sub>2</sub>—COOH. (11)
  - 9. The medical article of Claim 7, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid,  $\beta$ -hydroxybutyric acid,  $\alpha$ -hydroxyvaleric acid, and  $\epsilon$ -hydroxycaproic acid.
- 15 10. The medical article of Claim 7, wherein the diamine is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.
  - 11. The medical article of Claim 1, wherein the compound of formula (3) is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.

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- 12. The medical article of Claim 1, wherein the compound of formula (4) is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.
- 13. The medical article of Claim 1, wherein the compound of formula (5) is a PEG-diester-diamine conjugate, the conjugate is a product of condensation of an amino acid and poly(ethylene glycol).
  - 14. The medical article of Claim 13, wherein the amino acid has the formula (10):

    H<sub>2</sub>N-CHR<sub>1</sub>-COOH. (10)
- The medical article of Claim 13, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, phenyl alanine, tyrosine,
   serine, and glutamic acid.
  - 16. The medical article of Claim 1, wherein the compound of formula (6) is a PEG-amidediol conjugate, the conjugate is a product of condensation of a hydroxy acid and PEG-diamine.
    - 17. The medical article of Claim 16, wherein the hydroxy acid has the formula (11):

15 
$$HO-R_2-COOH$$
. (11)

- 18. The medical article of Claim 17, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid, β-hydroxybutyric acid, α-hydroxyvaleric acid, and ε-hydroxycaproic acid.
- 19. A medical article comprising an implantable substrate having a coating, the coating including a copolymer having a general formula (12) or (13):

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$$-[M-P]_m-[M-Q]_n-$$
 (12)

$$-[M_1-P]_p$$
 (13)

wherein:

M is a moiety represented by the structure having the formula (14)

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$$\begin{array}{cccc}
O & O \\
\parallel & \parallel \\
-C-R_2-C-
\end{array}$$
(14)

P is a moiety selected from a group consisting of structures having the formulae (15),

10 (16), (17), and (18):

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$$-O-X-O-$$
 (17)

$$20 -NH-Y-NH-$$
 (18)

Q is a moiety selected from a group consisting of structures having the formulae (19), (20), and (21)

$$\begin{array}{c|ccccc}
O & O \\
\parallel & \parallel \\
-O-R_2-C-NH-Z-NH-C-R_2-O-
\end{array}$$
(20)

-O-Z-O-, and -NH-Z-NH- (21)

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 $M_1$  is a moiety represented by the structure having the formula (22):

R<sub>1</sub> is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R<sub>2</sub> is methylene, methylene, n-propylene, iso-propylene, ethylmethylene, n-butylene, iso-butylene, sec-butylene, or n-amylene group;

 $R_3$  is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

X is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

Y is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is 1, 2, or 5;

Z is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone, and cellulosics; and

m, n, and p are integers where the value of m is between 5 and 1,800, the value of n is between 1 and 800 and the value of p is between 4 and 1,500.

20. The medical article of Claim 19, wherein the polymer is selected from a group consisting of copolymers of formulae (23), (24), (25), (26), (27), (28), (29), (30), (31), (32), (33), (34), (35), (36), (37), (38), (39), (40), (41), (42), and (43):

(23)

$$\begin{bmatrix} O & CH_3 & O & CH_3 \\ -C - CH_2 - C - NH - CH - C - O - CH_2 - AO - C - CH - NH \\ -C - CH_2 - C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - CH - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - CH - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - CH - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - CH - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ -C - CH_2 - C - CH_2 - CH_$$

(24)

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(25)

(26)

$$\begin{bmatrix} CH_3 - CH - CH_3 & CH_3 - CH - CH_3 \\ O & O & CH_2 & O & O & CH_2 \\ -C - CH_2 - C - NH - CH - C - O - CH_2 - O - C - CH - NH - CH_2 - CH_$$

(27)

(28)

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$$= \begin{bmatrix} O & O & CH_3 & O & CH_3 & O & CH_3 \\ C & CH_2 & C & -O - CH - C - NH + CH_2 & NH - C - CH - O \end{bmatrix}_{m} \begin{bmatrix} O & O & O & O \\ C & CH_2 & C & CH_2 & C & O \end{bmatrix}_{n}$$

(30)

$$\begin{bmatrix} O & CH_{3} & O & CH_{3} & O & CH_{3} \\ -C & CH_{2} & C & -CH & -C & -NH & -C & -CH & -O \\ -C & CH_{2} & C & -O & -CH & -C & -NH & -C & -CH & -O \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & C & -NH & -PEG_{600} & -NH \\ -C & -CH_{2} & -NH & -PEG_{600} & -NH$$

5 (34)

$$\begin{array}{c|c}
\hline
O & O \\
 & C \\
\hline
C & CH_2 \\
\hline
8 & C \\
\hline
O & O \\
C & CH_2 \\
\hline
8 & C \\
\hline
O & PEG_{2000} \\
\hline
O & C \\
\hline
C & CH_2 \\
\hline
8 & C \\
\hline
O & PEG_{2000} \\
\hline
O & O \\
\hline
O & C \\
\hline
O & O \\
\hline
O & C \\
\hline
O & O \\
\hline
O$$

$$= \begin{bmatrix} O & O & CH_3 & O & O & CH_3 \\ \parallel & \parallel & \parallel & \parallel & \parallel & \parallel \\ C - (CH_2)_4 & C - NH - CH - C - O - (CH_2)_4 & O - C - CH - NH \\ \end{bmatrix}_{0.37} \begin{bmatrix} O & O & CH_3 & O & O & CH_3 \\ \parallel & \parallel & \parallel & \parallel & \parallel & \parallel \\ C - (CH_2)_4 & C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ \end{bmatrix}_{0.67}$$

5 (40)

(41)

(42)

(43)

- A method for fabricating a medical article, the method including synthesizing a copolymer and forming a coating based on the copolymer on at least a portion of an implantable substrate, the synthesizing of the copolymer including reacting a first reagent with a second reagent and with a third reagent, wherein:
- (a) the first reagent is selected from a group consisting of compounds having formulae(1), (2), (3), and (4):

15 O O 
$$\| \| \| \|$$
 (2) HO-R<sub>2</sub>-C-NH-Y-NH-C-R<sub>2</sub>-OH

$$HO-X-OH$$
 (3)

20 
$$H_2N-Y-NH_2$$
 (4)

(b) the second reagent is selected from a group consisting of compounds having formulae (5), (6), (7), and (8):

O O 
$$\| \| \| \|$$
 (6) HO—R<sub>2</sub>—C—NH—R<sub>4</sub>—NH—C—R<sub>2</sub>—OH

$$HO-R_4-OH$$
 (7)

$$H_2N-R_4-NH_2$$
 (8)

(c) the third reagent is a dicarboxylic acid having the formula (9):

wherein:

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R<sub>1</sub> is hydrogen, methyl, iso-propyl, sec-butyl; iso-butyl, or benzyl group;

R<sub>2</sub> is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*-butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

 $R_3$  is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

R<sub>4</sub> is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone), and cellulosics;

X is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

Y is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is 1, 2, or 5.

- 5 22. The method of Claim 21, wherein the implantable substrate is a stent.
  - 23. The method of Claim 21, wherein the molar ratio between the first reagent, the second reagent, and the third reagent is about 1:1:2.
  - 24. The method of Claim 21, wherein the compound of formula (1) is a dioldiamine, the diol-diamine is a product of condensation of an amino acid and a diol.
- 10 25. The method of Claim 24, wherein the amino acid has the formula (10):  $H_2N$ — $CHR_1$ —COOH. (10)
  - 26. The method of Claim 24, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, and phenyl alanine.
- 27. The method of Claim 24, wherein a diol is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.
  - 28. The method of Claim 21, wherein the compound of formula (2) is an amidediol, the amidediol is a product of condensation of a hydroxy acid and a diamine.
  - 29. The method article of Claim 28, wherein the hydroxy acid has the formula (11):

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$$HO-R_2-COOH.$$
 (11)

- 30. The method of Claim 28, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid,  $\beta$ -hydroxybutyric acid,  $\alpha$ -hydroxyvaleric acid, and  $\epsilon$ -hydroxycaproic acid.
- 5 31. The method of Claim 28, wherein the diamine is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.
  - 32. The method of Claim 21, wherein the compound of formula (3) is selected from a group consisting of ethylene glycol, 1,3-propanediol, 1,4-butane diol, 1,5-pentanediol, 1,6-hexanediol, 1,7-heptanediol, 1,8-octanediol, 1,9-nonanediol, 1,10-decanediol, 1,11-undecanediol, and 1,12-dodecanediol.
  - 33. The method of Claim 21, wherein the compound of formula (4) is selected from a group consisting of putrescine, 1,2-ethanediamine, and cadavarene.
  - 34. The method of Claim 21, wherein the compound of formula (5) is a PEG-diester-diamine conjugate, the conjugate is a product of condensation of an amino acid and poly(ethylene glycol).
    - 35. The method of Claim 34, wherein the amino acid has the formula (10):

      H<sub>2</sub>N-CHR<sub>1</sub>-COOH. (10)
  - 36. The method of Claim 34, wherein the amino acid is selected from a group consisting of glycine, alanine, valine, isoleucine, leucine, phenyl alanine, tyrosine, serine, and glutamic acid.

- 37. The method of Claim 21, wherein the compound of formula (6) is a PEG-amidediol conjugate, the conjugate is a product of condensation of a hydroxy acid and PEG-diamine.
  - 38. The method of Claim 37, wherein the hydroxy acid has the formula (11):

5 
$$HO-R_2-COOH$$
. (11)

- 39. The method of Claim 37, wherein the hydroxy acid is selected from a group consisting of glycolic acid, lactic acid,  $\beta$ -hydroxybutyric acid,  $\alpha$ -hydroxyvaleric acid, and  $\epsilon$ -hydroxycaproic acid.
- 40. A method for fabricating a medical article, the method including synthesizing a copolymer and forming a coating based on the copolymer on at least a portion of an implantable substrate, wherein the copolymer has a general formula (12) or (13):

$$-[M-P]_m-[M-Q]_n-$$
 (12)

$$-[M_1-P]_p$$
 (13)

wherein:

M is a moiety represented by the structure having the formula (14)

$$\begin{array}{cccc}
O & O \\
\parallel & \parallel \\
-C-R_3-C-
\end{array}$$
(14)

P is a moiety selected from a group consisting of structures having the formulae (15), (16), (17), and (18):

5 O O 
$$\| \| \|$$
 (16)  $-O-R_2-C-NH-Y-NH-C-R_2-O-$ 

$$-O-X-O-$$
 (17)

$$10 \qquad -NH-Y-NH- \tag{18}$$

Q is a moiety selected from a group consisting of structures having the formulae (19), (20), and (21)

 $M_1$  is a moiety represented by the structure having the formula (22):

$$\begin{array}{ccccc}
O & O \\
\parallel & \parallel & & \\
-C - Z - C - & & & \\
\end{array} (22)$$

R<sub>1</sub> is hydrogen, methyl, *iso*-propyl, *sec*-butyl; *iso*-butyl, or benzyl group;

R<sub>2</sub> is methylene, methylmethylene, *n*-propylene, *iso*-propylene, ethylmethylene, *n*30 butylene, *iso*-butylene, *sec*-butylene, or *n*-amylene group;

 $R_3$  is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

X is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is an integer between 2 and 12;

Y is a straight chained or branched aliphatic alkylene group  $C_nH_{2n}$ , wherein n is 1, 2, or 5; and

- Z is a moiety derived from a compound selected from a group consisting of poly(ethylene glycol), poly(propylene glycol), random poly(ethylene glycol-co-propylene glycol), poly(ethylene glycol)-block-poly(propylene glycol), hyaluronic acid, poly(2-hydroxyethyl methacrylate), poly(3-hydroxypropylmethacrylamide), poly(styrene sulfonate), poly(vinyl pyrrolidone, and cellulosics; and
- m, n, and p are integers where the value of m is between 5 and 1,800, the value of n is between 1 and 800 and the value of p is between 4 and 1,500.
  - 41. The method of Claim 40, wherein the copolymer is selected from a group consisting of copolymers of formulae (23), (24), (25), (26), (27), (28), (29), (30), (31), (32), (33), (34), (35), (36), (37), (38), (39), (40), (41), (42), and (43):

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(23)

$$\begin{bmatrix} O & O & CH_3 & O & CH_3 \\ C & CH_2 \end{bmatrix}_{2}^{2} C - NH - CH - C - O + CH_2 \end{bmatrix}_{4}^{2} O - C - CH - NH$$

$$\begin{bmatrix} O & CH_3 & O & CH_3 \\ C & CH_2 \end{bmatrix}_{2}^{2} C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ O & CH_3 & C - CH_3$$

$$\begin{bmatrix} CH_{3}-CH-CH_{3} & CH_{3}-CH-CH_{3} \\ O & O & CH_{2} & O & O & CH_{2} \\ -C-CH_{2} & C-NH-CH-C-O-CH_{2} & O-C-CH-NH \\ -C-CH_{2} & C-NH-PEG_{600}-NH \\ -C-C$$

$$\begin{bmatrix} CH_3-CH-CH_3 & CH_3-CH-CH_3 \\ O & O & CH_2 & O & O & CH_2 \\ C-CH_2 & C-NH-CH-C-O & CH_2 & O & CH-NH \\ C-CH_2 & C-CH-CH-C-NH-PEC_{600} & NH-C-CH-O \\ D & C-CH-C-NH-PEC_{600} & NH-C-CH-O \\ D & C-C-C-H-C-NH-PEC_{600} & NH$$

$$\begin{bmatrix}
O & O & CH_3 & O & CH_3 \\
C & CH_2 & C & O & CH & C & CH & CH_2 \\
0 & O & CH_3 & O & CH_3 \\
0 & C & CH_2 & C & O & PEG_{300} \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2 & C & CH_2 & C & CH_2 & C & CH_2 \\
0 & C & CH_2$$

(32)

$$\begin{array}{c|c}
\hline
O & O \\
 & C \\
\hline
C & CH_2 \\
\hline
8 & O \\
\hline
C & CH_2 \\
\hline
6 & M
\end{array}$$

$$\begin{array}{c|c}
O & O \\
 & C \\
\hline
C & CH_2 \\
\hline
8 & O \\
\hline
NH - PEG_{600} - NH \\
\hline
n$$
(34)

5 (37)

$$\begin{bmatrix} CH_{3}-CH-CH_{3} & CH_{3}-CH-CH_{3} \\ O & O & CH_{2} & O & O & CH_{2} \\ || & || & || & || & || & || \\ C-PEG_{1000}-C-NH-CH-C-O-CH_{2}-O-C-CH-NH-IN \\ (38) \end{bmatrix}$$

$$= \begin{bmatrix} O & O & CH_3 & O & O & CH_3 \\ \parallel & \parallel & \parallel & \parallel & \parallel & \parallel \\ C - (CH_2)_4 & C - NH - CH - C - O - (CH_2)_4 & O - C - CH - NH \\ \end{bmatrix}_{0.37} \begin{bmatrix} O & O & CH_3 & O & O & CH_3 \\ \parallel & \parallel & \parallel & \parallel & \parallel & \parallel \\ C - (CH_2)_4 & C - NH - CH - C - O - PEG_{300} - O - C - CH - NH \\ \end{bmatrix}_{0.67}$$

(40)

. (4

(42)

(43)